

**Notice of Allowability**

Application No.

10/647,669

Examiner

Geoffrey Mruk

Applicant(s)

AKAHANE ET AL.

Art Unit

2853

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 15 September 2005.
2. ☒ The allowed claim(s) is/are 1-10 and 13-24.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

**MANISH S. SHAH**  
**PRIMARY EXAMINER**

## **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

The primary reasons for allowance for claims 1-10 and 24 that the applicant's claimed invention includes a liquid ejection head, comprising a chamber formation plate, having a first face formed with a plurality of recesses arranged in a first direction at a fixed pitch, such that each of the recesses is communicated with, via a through hole, a second face which is an opposite face of the first face, the chamber formation plate comprised of nickel; wherein a ratio of a grain size of a crystal of the nickel with respect to a thickness of a partition wall defined between each adjacent ones of the recesses is 60% or less. It is this limitation, expressed in the claimed combination not found, taught, or suggested in the prior art, that makes these claims allowable over the prior art.

The primary reasons for allowance for claims 13-23 that the applicant's claimed invention includes a liquid injection head, comprising a first pressure generating chamber; a second pressure generating chamber disposed adjacent to the first pressure generating chamber, a partition wall formed between the first pressure generating chamber and the second pressure generating chamber; wherein the partition wall comprises nickel having a particle size, and wherein the partition wall has a thickness defined in a direction from the first pressure generating chamber to the second pressure generating chamber, and wherein a ratio of the particle size to the thickness is 60% or less. It is this limitation, expressed in the claimed combination not

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found, taught, or suggested in the prior art, that makes these claims allowable over the prior art.

United States patent number 6,146,915 to Pidwerbecki et al., disclose a reduced size printhead for an inkjet printer having an orifice plates made of electroformed nickel plated with a palladium protective layer, where "A thinner orifice plate is needed to reliably achieve the lower drop weight ink drops. To overcome the material strength limitations of such a thinner orifice plate, an annealing step in the manufacture of the printhead is employed to modify the material properties of the orifice plate" (abstract). "Using the Scherer formula, an estimate of the particle size at each temperature can be made for the nickel (curve 701) orifice plate and palladium (curve 702) plating as is shown in FIG. 7. The grain size does not change noticeably until the annealing temperature is above 200 C. The electroplated grain size is estimated to be approximately 200 Å for both nickel and palladium prior to annealing (Column 7, lines 28-35). However, does not disclose a chamber formation plate comprised of nickel.

The examiner makes of record that the previous drawing and claim objections dated 18 May 2005 are withdrawn in view of applicant's remarks.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
12/22/2005

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12/22/05  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**